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(INCORPORATED.)

Contents.

The Managing Editor presents his compliments to all readers of the *Planters' Chronicle* and wishes them a Prosperous New Year.

A very interesting article is contributed by the Planting Expert, giving his impressions of his visit to Messrs. Matheson & Co's Rubber Estates which by the kind permission of Mr. Mahon we are able to publish. It is important that the Planting Expert advises the use of cuttings by selection rather than seed, as being more likely to secure trueness to type, especially in a tree so variable in yield as the Ceará. The whole article is of practical value and guidance to Rubber planters.

A short report from the Bibabudin Planters' Association is published and a short continuation of Nilgiri notes, and it is pleasant to note in the latter that the coffee so far cured is better than that of last year. For those intending to experiment with *Robusta Coffea* the article on it will prove interesting. The yield appears very good, but this may be a question of climate, and it does not do to be too sanguine, and it is to be regretted that it has not been found immune from disease.

Only a short notice could be taken of the New York Rubber Exposition—the pages of *The India Rubber World* being literally crammed with matters of absorbing interest. But it has been thought advisable to once again warn Rubber Planters of the possible advent of Synthetic Rubber in the future. The laying of that bug bear largely lies in their own hands.

The Chairman has nominated the Hon'ble Mr. Barber to represent this Association before the Commission now sitting in Madras.

During the Christmas Holidays a fête had been held in the Cubbon Park, and one of the most interesting booths was that erected by Mr. Kruembiegel, Economic Botanist to the Government of Mysore, which contained Rubber Exhibits, rubber trees in the process of being tapped and rubber knives, &c. We believe it would be a good thing to have permanent cases, in the offices of the Association. Many people have asked the Secretary where these can be seen, and he hopes to secure the support this year of all planters.

Scientific Officer's Papers.

CXIV—CEARA RUBBER IN COORG.

During my recent visit in Coorg in connection with the assumption of his duties by the Scientific Assistant I was enabled by the courtesy of Mr. Mahon to inspect the Ceará Rubber in South Coorg and see the progress that had been made with this industry.

The following is an extract from a report I wrote for Messrs. Matheson & Co., as a result of this visit which Mr. Mahon has given me permission to publish for the benefit of those who are interested in Ceará Rubber in other planting districts:—

I have been re-reading what I have written from time to time in the *Planters' Chronicle* about Ceará Rubber. I would like to say at the outset how delighted I am with the work that has been done on the estates and the spirit in which this new industry is being studied. My original opinion as stated in my report on my first visit to Coorg that, 'I saw no reason to suppose that this industry will prove anything but satisfactory in the district' has been amply justified in the light of the work done upon it.

CULTIVATION AND MANURING.

In that report also I said, 'It must be remembered that this, like other crops, will respond to good soil and good cultivation'; and again in a lecture delivered at Yercaud in 1913, 'Ceará Rubber will respond to good land and good cultivation just as much as coffee or any other crops; and if it is to be grown seriously every attention should be paid to this.' When considering the results already obtained allowance must be made for the fact that the large majority of the Ceará Rubber now being tapped, if not all of it, has been badly neglected. It was planted in poor land for the most part and then allowed to take care of itself. Now that it has been proved beyond dispute that as far as South Coorg is concerned this is a paying crop, future plantations should receive just as much care as coffee or Para rubber receive, they should be planted in as good land as possible, cultivated, kept free from grass and noxious weeds, and manured if necessary. If this is done, more even clearings will be obtained as well as larger trees. The evenness of a clearing is an important factor in rubber cultivation, because when the tapping stage is reached 90% or more of the trees can be tapped, making the tasks more easy to arrange for the tappers, and generally facilitating the field arrangements and reducing the cost of production. So important is this factor to my mind that I consider it is better for a clearing to be a year behind in growth but even, than for it to make a remarkably rapid but uneven growth. This being so I wish to suggest that it would be well to examine clearings annually ~~and~~ they are 18 months old and fork round, and manure all backward and small trees with the idea of making them catch up their bigger neighbours, and to aim at getting an even clearing before manuring it as a whole.

TAPPING.

I was intensely interested in the field results shown and the arguments brought forward by the two schools of tappings which are existant. For my part I favour the herring-bone-paring school, despite the fact that I originally advocated vertical tapping. I object to the vertical tapping *as at present carried out* for the following reasons. As I understood the matter it was admitted by those who were adopting the vertical tapping system that the cambium was being removed at each cut, and it was argued that unless this was done a small yield of latex only could be obtained

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and that despite the removal of the cambium the wounds healed over satisfactorily if the exposed wood was treated with Jodeline. Trees were displayed to prove this fact and no doubt they proved it satisfactorily. Therefore, the argument ran, why not remove the cambium and get the yield?

My objection is this. When dealing with a 24 inch girth tree, 6 inches of bark and cambium are removed, and as proved by experience the wound thus made *will heal over from the edges*, like any other wound and it will take about 2 years to do so. But suppose the tree was 48 inches in girth as it will be in a few years time. Then one foot of bark and cambium will be removed in each season's tapping and the bigger the tree the bigger the wound will be. Now it will take about 4 years for a foot wound to completely heal and by that time you will be ready to tap on to the renewed bark and the state of affairs will be one quarter of the tree just healed up, one quarter nearly healed up, one quarter about half healed up and one quarter open wound. Now the latex is a store of plant food and it must be drawn up to heal wounds and a tree in the condition just described will have a decreased latex supply and a low vitality and it is obvious that the bigger the tree the worse the conditions will be.

That is my line of argument against the present system. I am perfectly ready to admit that the final proof is the practical one in the field, but I should like the 'vertical-tapping remove the cambium' school to very carefully think about my line of argument. Another thing I had said was that Ceára will grow so quickly that it does not matter about killing the trees, in fact it is possibly the best way of killing them to tap them to death and replant. But are we certain that we could replant successfully? The land might become Ceára sick, and disease, especially root disease, might get in, due to stumps and roots in the soil however carefully we might try to remove them.

Therefore, I consider it is best to tap lightly, avoiding touching the cambium so that the wounds heal rapidly behind the knife *all over the surface* and not from the edges, as they do in the herring-bone system. If the vertical system is adopted the cambium should not be cut. This will reduce the yield but I think increased yield should be obtained by other methods, namely by manuring and selection.

I have one other criticism to offer with regard to the herring-bone tapping as I saw it both on Ceára and Hevea, and that is that insufficient attention was being paid to keeping the daily tapping lines parallel. I would call attention to what was said about this important point in the *Chronicle*, Vol. VI, p. 283 and there is no need for me to repeat here what was said there. A good practical way of helping the tappers to keep the right angle is to make light guide lines at one inch interval down the tree. These not only act as guides but also allow the Superintendent to get a rapid idea of how many cuts per inch the tappers are making. A minimum of 18 should be insisted on and 20 aimed at.

One other suggestion about tapping. I understood that about 6% of scrap was obtained and I think this could be reduced. It appeared to me from what I saw in the field that the latex did not run down the cuts very freely and was apt to congeal in them a great deal too much. I would suggest that some experimental work be done with starting the latex flowing with water (or better still ammonia) as is done in the case of Hevea tapping. I think this would reduce scrap and consequently increase the yield of high grade rubber.

SELECTION.

On several occasions I have pointed out that Ceará is a very variable tree as regards yield of latex and rubber. In the lecture referred to above I said "In a plantation of Ceará you will probably find a very great variability between individual trees both in appearance and in yield of latex. While some trees give a good yield others give hardly any. Those of you who intend to extend your cultivation of Ceará should test your existing trees by experimental tapping and when you find a really good one, break it up into cuttings and plant your new clearings with these. These will give trees true to type, while seed will not come true owing to the natural cross fertilisation which goes on between the bad and good trees" (P. C. Vol. V, p. 199).

It is along these lines that I would suggest increased latex yield should be obtained rather than by severe tapping. This work has been begun at Margolby where there is a good clearing planted with cuttings from selected trees. When this comes to maturity the best tree in it should be again selected and cuttings planted from this and so on. In this work there are two points to be noted, I think, first that a tree which gives a big latex flow is not necessarily the best rubber yielder and so selection should be made for rubber yield and not latex yield only; secondly in planting cuttings a sucker should be obtained from as near the ground as possible and the stump (original cutting) should be trimmed and treated with Jodelite so as to prevent any rotting back or open wound until a good root system is established.

In my opinion all future planting of Ceará should be from selected trees and if seed is used it should be taken only from selected trees of known high rubber yield, and a process of selection should be rigidly carried out.

THINNING OUT.

Much of the existing rubber is planted too closely and as the trees grow older and increase in size it will be necessary to thin them out. This thinning should be done, in my opinion, by taking out first all the small over-shaded trees, and then by removing poor yielders, &c. This will leave the trees irregularly spaced, but I do not think that that matters. If every other tree, or every other line of trees, are taken out, many of the best trees are sacrificed while bad ones are left.

MANUFACTURE.

With the present machinery this appears to be excellent, and I have no suggestions to make. A line of research is, I think, to discover exactly how much to roll and wash the rubber to remove the maximum amount of resin and yet retain the strength of the rubber. Over washing and rolling is said to reduce the value, but this needs investigation.

The question of smoking is still an unsolved process. Does smoking improve the quality of the rubber as such, or does it merely improve the keeping quality, or it does it only act as a disinfectant? If the latter probably there are less costly and more easily manipulated disinfectants than smoke. These are questions to be answered and they appear to be problems which the Scientific Assistant for Coorg might legitimately be asked to study.

RUDOLPH D. ANSTEAD,
Planting Expert,

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DISTRICT PLANTERS' ASSOCIATIONS.

Bababudin Planters' Association

*Proceedings of a Quarterly General Meeting held at Chikmagalur,
on December 21st, 1912.*

PRESENT:—Messrs. A. B. Boyd, (President), Allardice, Hugonin, Kerr Lovett, H. Watson and Kurwan, (Honorary Secretary).

VISITORS:—Messrs. C. Vasudeva Rao, (Honorary Secretary, Chickmagalur, P. A.,) J. Hugonin, G. More, D. W. Meppen, G. Rose.

The notice calling the meeting was read.

The Minutes of the last meeting were taken as read.

The following resolution was unanimously passed.

“That this Association has heard with great regret of the death of Mr. Delvai Devaraj Urs, who was for some time a most popular Deputy Commissioner of this District, and accord a cordial vote of sympathy with his widow and family.”

(1.) Letter from the President of the Kadur District Board announcing the sanction of the Santaveri Sunday Dispensary was read.

* The Honorary Secretary was instructed to write the President of the District Board and the P. M. O. thanking them for having sanctioned the Dispensary and to ask when it would be opened.

(2.) Correspondence from the Honorary Secretary, C. of M. P. A. was explained to the meeting. It was decided that all matters in connection with the re-arrangement of Subscriptions and Laboratory for the Scientific Assistant, should be left to the Association's representatives.

(3.) Read letter from the Secretary, U. P. A. re Customs Duty on Plantation Machinery.

Members having pointed out that they were charged duty on Estate Tools, etc., it was resolved that :—

“The opinion of the Meeting is that all agricultural machinery and implements should be allowed into the country Duty Free.”

(4.) Read letter from the Traffic Manager, M. and S. M. Ry., granting the concession asked for on manure from Dharwar to Birur, Kadur and Tarikere.

The Honorary Secretary was instructed to write and thank the Traffic Manager for granting the concession.

5. *Registration Scheme.*—The opinion of the Meeting is that we are glad to hear some scheme has been proposed and we have no suggestions to offer.

6. Proposed Toll-gate on Bababudin Hill Road.

Read letter from the District Board, and enclosure from the Secretary proposing to establish a Toll-gate on this road.

Mr. C. Vasudeva Rao, Honorary Secretary of the Chikmagalur P. A. addressed the meeting, giving the views of his association on the matter.

After some discussion it was decided to appoint a committee of three: Messrs. Hugonin, Lovett and Oliver to act in co-operation with the Chikmagalur P. A., the Chikmagalur Municipality, and the Kadur District Board, in opposing the institution of this Toll-gate.

It was further resolved to support the representation of the member for Chikmagalur to the Mysore Representative Assembly in his request to the Dewan that the enquiry might be held into the expenditure of the money allotted for roads, which was promised by the Dewan by the following resolution.

"That in the opinion of this Meeting if the money allotted for roads in this district were spent on the roads, they would not be in their present deplorable condition and that Government is asked to enquire into the matter."

With the usual vote of thanks the meeting terminated.

(Signed). N. G. B. KIRWAN,
Hony. Secretary.

NYASALAND PROTECTORATE.

AGRICULTURE IN 1911-12.

The coffee industry is dying out, as planters prefer the quicker and surer returns obtained from cotton and tobacco. Although the area devoted to coffee in 1911-12 was only 4,332 acres, compared with 5,629 acres in the previous year, yet owing largely to the plentiful and early rains, the crop amounted to 799,304 lbs., valued locally at £16,381, about double the previous year's figures. On account of drought it is anticipated that very little coffee will be exported from the 1912-13 crop, and the acreage of the crop following will probably be very much smaller.

The cultivation of rubber is still more or less in the experimental stage. The exports during 1911-12 amounted to 59,471 lbs., valued locally at £10,659; this is a decrease of £1,505 on the previous year, and is attributed to fewer people engaging in the collection of wild rubber and to the scarcity of labour in West Nyasa. The actual area under cultivated rubber shows an increase of about 1,500 acres, but the greater proportion is not yet ready for tapping.—*The Board of Trade Journal.*

MEXICO.

COFFEE CROP.

With reference to the notice on p. 36 of the *Board of Trade Journal* of 3rd October, relative to coffee production in Mexico, the Acting British Consul General at Mexico City (Mr. R. C. E. Milne) reports, under date 19th October, that the last coffee crop probably amounted to about 375,000 quintals (quintal 1014 lbs.); the official figures are not yet published, but the Acting Consul General is informed that in any event the total will not reach 400,000 quintals.

The first two flowerings last season in nearly all parts of the Republic were lost on account of a drought which followed the frost, and although the 1st flowering was an abundant one, it is stated to be insufficient to make up for previous losses.

The coming crop is not expected to be a good one, but at the time of writing (19th October) it was too early to forecast the prospects.—*The Board of Trade Journal.*

NILGIRI NOTES.

Weather.—To continue from the last notes showery weather continued up to end of November, but the first two weeks of December were fine. Then followed a week of thick mist, but not much rain. Since then it has been quite fine, very keen sun in the day with cold and even frosty nights.

Tea production is quiescent, and most estates have done a good proportion of their pruning.

Coffee crops have been coming in with a rush, and even high elevation estates have gathered over half the crop on the trees in spite of their late start. Many of the expected yields will not be realized though, but why it is difficult to say, as it has been a good "setting" season. Prices locally have declined about Rs.2 per ewt., but the outturn of the little that has been cured is better than last year.

The Experimental Plot.—It was interesting to read Mr. Anstead's vigorous defence regarding this, and gratifying to learn that all is well. The best thing to be done now is to let "well" alone, and to forget all about it for a few years, by which time it is possible that some tangible results will be evolved from the work carried on there.

Labour.—Another year is closing with still nothing done in this direction. Can anyone prophesy better prospects by the end of 1913? The following nonsense riddle was propounded to me the other day by a friend. I am sorry for him, but is it an omen?—

"When will the Fingerprint?"

"When Maidries (May's Trees) brighten the cooie (wool) ey." *

28th December, 1912.

RUBBER.

For several years past experiments have been carried out at Hemavathogoda with a view to determining the effect of tapping trees at various intervals. The results of experiments during 1911 and the first two months of 1912 are discussed by R. H. Lock in *Trop. Agric.* (1912, 38, 385). As already mentioned in the Bulletin (1911, 9, 10), the yield per tapping increases with the interval between successive tappings, up to an interval of four days, and remains high up to an interval of nine days. The later experiments show that the longer the trees are tapped the greater becomes this difference in yield. During January and February of this year trees tapped at intervals of five, six and a half, and eight days each yielded a larger amount of rubber from twelve, ten, and eight tappings respectively than trees tapped at intervals of two and a half and four days from twenty-four and twenty-seven tappings respectively. Expressed as yields per acre, that of 1911 shows an increase over the average yield for 1909-10 in every instance, but the increase is much greater in the case of trees tapped at longer intervals, and ranges from 55 per cent. in the case of trees tapped at six and a half days' interval to 59 per cent. in the case of those tapped at an interval of five days. According to the figures at present available an interval of six and a half days appears likely to give the best final result, trees tapped in this manner giving the highest total yield in the first two months of 1912. Dr. Lock thinks that the facts so far available point to the desirability of increasing the interval at present in vogue between successive tappings.—*Bulletin of the Imperial Institute*.

COFFEE.

Robusta Coffee.

[Continued.]

Topping and Pruning.—Young plants of *C. robusta* have a strong tendency to form primary branches, thus becoming too tall for plantation purposes. It is therefore necessary to top the plants at an early stage, the process being best carried out when they are about eighteen months old; the stems should be cut back to a height of 8 feet. The plants reach their full development in about three years, the topping resulting in the formation of secondary branches, which are not markedly inferior to the primary shoots in their yield of berries. A drawback to the practice of topping is the formation of suckers at the top of the stem, and these must be removed regularly. It should also be noted that in young plants freely exposed to the sun there is an increased formation of secondary branches. The pruning required is less than in the case of Liberian coffee, but it should be commenced earlier. Injuries received during weeding also cause the production of new shoots near the base of young plants, and, as mentioned above, such shoots must at once be removed. The heavy pruning adopted for Liberian coffee is to be avoided in the case of Robusta coffee when grown as a catch-crop with rubber, since under such circumstances the life of the coffee as a crop is limited to a few years, and the removal of a large proportion of the branches would seriously affect the total yield. Gallagher recommends that all pruning should be done with a sharp knife, and not by plucking.

Yield.—*C. robusta* first comes into flower about a year after planting out, though shorter periods have been noted in plantations in Sumatra. As in the case of Liberian coffee, flowering continues more or less regularly all the year round, but the maximum production of berries occurs during the dry season. It is stated that practically all the flowers set fruit, exceptions occurring among the first flowers formed by the plant, and also sometimes during the wet season. The time required for the ripening of the fruits after flowering is about nine months; the first harvest may therefore be looked for within two years of the establishment of the plantation. The ripe berries remain on the trees for three or four weeks, and a monthly picking is necessary.

One of the most attractive features of Robusta coffee is the heavy yield. Statistics on this point have been collected by Cramer in reference to permanent plantations in Java, where the coffee was grown under shade. On an estate where the trees were planted quincuncially, 12 feet by 12 feet, the following yields were obtained:—

Year,	Age of Coffee.		Yield. Cwt per acre.
	Years.		
1905	2	1'5
1906	3	5'5
1907	4	17'0
1908	5	15'0
1909	6	21'0—24'0

On another estate the coffee was set out at 10 feet by 10 feet, quincuncially, with a nutmeg tree in the place of every ninth coffee plant, and the yield was as follows:—

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Year,	Age of Coffee,		Yield. Cwt. per acre.
	Years,	Age,	
1906	2	1.5
1907	3	10 (: 10.5)
1908	4	17.0
1909	5	17.0

The returns of a Java estate planted out at 10 feet by 10 feet with 45 trees taking the place of manegs, giving a total of 290 coffee plants per acre, are quoted by Galigher: -

Age,	Yield per acre.		
	Pikuls.	Cwt.	
2nd year	..	1	1.2
3rd	6	7.1
4th	14	16.0
5th	14	16.6

It should be borne in mind, however, that local conditions may have a profound effect on the yield of the plant. It is stated, for instance, that in Singapore the yield of Robusta coffee is less than that of Liberian or even of Arabian coffee.

Robusta Coffee as a Catch crop for Rubber. The above figures apply to the plant when grown as a main crop, but when planted as an inter-calary crop (e.g. with Para rubber) the yield will necessarily be less, as a result of the shade afforded by the permanent crop becoming excessive. In this connection it will be well to summarise the present state of opinion with regard to the value of *C. robusta* as an intercalary crop for use with Para rubber. Essential features in a temporary crop are that it should be in no way detrimental to the main crop, especially in the competition for plant food in the soil, and in its relation to pests affecting the main crop. It should give a reasonable return at the earliest possible moment; the cultivation necessary should be relatively simple and inexpensive and the preparation of the final product for the market should not, if possible, entail the use of costly machinery. These conditions would appear to be in some measure satisfied in the case of *C. robusta* though not to the extent formerly supposed. Its cultivation is simple, and a small return may be looked for during the second year, while in the third season after planting a full crop of 15 cwt. per acre may be obtained. It is also stated that, so far as experience goes, *C. robusta* in no way interferes with the growth of the rubber trees. On the other hand, further experience with the coffee has shown that it is by no means so free from disease as was supposed to be the case during the early period of its introduction, and it is significant that the Department of Agriculture for the Federated Malay States advise against the interplanting of rubber with "coffee" as being "agriculturally unsound, especially as the coffee is a 'host plant of Fomes or root disease.'" Robusta coffee is not specifically mentioned in this statement, but since (as mentioned below under "Pests") Robusta coffee has been found to be susceptible to fungoid diseases attacking rubber, the warning stands good in connection with this species. Cramer has given the following outline of the course of management of a rubber estate interplanted with Robusta coffee. Flowers should appear during the first year after planting, and during the next season a small crop of between 1 and 2 cwt. per acre may be expected. The yield during the third and fourth years should have risen to about 14 cwt. per acre, but by the fifth year the shade of the rubber will have resulted in a diminution of yields in all the coffee trees except those in the middle rows, and a yield higher than 7 cwt. per acre cannot be

looked for. Beyond the fifth year the intercalary crop would be unprofitable and the trees should be removed.

PREPARATION.

The preparation of Robusta coffee for the market is in no respect essentially different from that of the more important Liberian and Arabian coffees. As stated above, Robusta berries are smaller than those of Liberian coffee, and the pulping machines in use in those countries where the latter is grown will be found to be unsuited to the smaller fruits. Gallagher states that a small Lidgerwood pulper is the most satisfactory machine, and emphasises the importance of marketing a well-prepared product. The Walker pulper has also been found suitable. The pulped coffee is then fermented, and Van Lennepe recommends a period of 36 hours for this process. The fermented beans should be well washed and transferred while wet to the drying-house, where they must be dried as quickly as possible. The coffee should be moved frequently during the process in order to effect an even and regular drying. If dried at less than 60° C. a difficulty is experienced in removing the silver-skin, as is also found to be the case in sun-dried samples. The Guardiola drier is mentioned by Gallagher as being especially suited. As already stated, it is estimated that 4 cwt. of the fresh berries yield 1 cwt. of marketable coffee as compared with about 10 cwt. of Liberian berries required to yield the same amount. There is, of course, an even greater superiority over Arabian coffee in this respect.

PESTS.

Down to the present time *C. robusta* has been comparatively free from serious disease. It should be borne in mind, however, that there is strong evidence that this state of affairs will not continue indefinitely, and the health of the plantation should be carefully watched. As regards liability to insect attack, Gallagher states that *C. robusta* cannot be said to show any superiority over *C. liberica*. The most dangerous insect pest is the boring beetle, *Xyleborus coffeae*, Wurth., which attacks the branches of the plant. It would appear that the best method of coping with this insect is to maintain the plantation in vigorous health, and to encourage the formation of strong secondary branches by topping. The early statements made with regard to the immunity of Robusta from fungoid diseases have unfortunately, but not unexpectedly, proved to be unfounded. The chief fungoid pest in Java is *Corticium javanicum*, which appears on the trunk and lower surface of the branches, causing the bark to dry out, and killing the wood. Cramer advises that in dealing with this disease the bush should be cut down and a sucker arising from the stump trained as the new main shoot, which should be topped in the usual manner. Much interest attaches to the question of the susceptibility of *C. robusta* to the attack of *Hemileia vastatrix*, the fungus causing the coffee-leaf disease. Soon after the discovery of the plant it was stated that a species of Coffea practically immune from this disease had been obtained, and high hopes were entertained of the discovery. It would seem, however, that these hopes are to be by no means fully realised, since, under cultivation in Java, *C. robusta* is proving susceptible to Hemileia, though up to the present the attacks are not serious. Further, in the Federated Malay States, Bancroft reports that Hemileia is as prevalent on *C. robusta* as it is on *C. liberica*.

Similar statements as to immunity from root disease have also proved to be unfounded. Bancroft finds that in the Federated Malay States *Fomes semitostus* and *Hymenochaete noxia*, both well-known root diseases of Para rubber, have been found to attack the roots of Robusta coffee, a fact of great importance to rubber planters. It is partly on these grounds that the interplanting of Para rubber with coffee has been officially discouraged in the Federated Malay States.—*Bulletin of the Imperial Institute*.

RUBBER.

New York Rubber Exposition.

Three very interesting numbers of the *India Rubber World* have been received at the office, which deal mainly with the late Exposition held in New York, but unfortunately are too long to publish *carbation* in the *Chronicle*. This was the third Rubber Exhibition—the two former having been held in London—and has not only been a great trade success, but has aroused general interest, and at each recurring exhibition that interest will undoubtedly increase amongst the public as the never ending use of rubber in its manifold appliances is brought nearer home to them. Curiosity to know how these articles are manufactured and a desire to know more of those countries that supply their daily wants and luxuries (which are now steadily becoming necessities) will extend knowledge of the habits and customs of those countries where rubber is grown; and increased knowledge must increase the sum of human happiness. Never yet has there been such a huge collection of crude rubber got together and exhibited as that which was on view at New York, and we may expect to see enormous strides made at the next exhibition to be held in London in 1914, when it is to be hoped that Southern India will be largely represented, and earn for itself a reputation second to none as a rubber producing country. It seems impossible to foresee the limits to which rubber can be put; and with the aid of science, without which no great permanent success will be achieved, there is no reason to believe that the demand for rubber will be less than the supply. With what emotion and wonder Goodyear, whose accidental discovery has made his name immortal in the rubber world, would have compared his exhibition, the first of rubber goods in 1851 and the gigantic Exposition of New York just closed. Two facts stand out prominently and these are "The Awakening of Brazil" and "The Arrival of Synthetic Tires." The former country, not satisfied with dominating the coffee world, has wakened to the fact that it can also, with its enormous resources of natural rubber, dominate the rubber world, and to protect and foster this industry, "The Ministry of Agriculture of Brazil," says the *India Rubber World*, "has recently published in pamphlet form in English the decrees and regulations passed by the National Congress and approved by the President, looking to the encouragement of rubber production in that country. This action on the part of the great rubber republic is incomparably the most important step ever taken in that country to protect its leadership in rubber production." "These decrees," continues the *India Rubber World*, "and regulations are carefully thought out and comprehensive and should do much to stimulate a wide activity in rubber production in the Amazon country. These decrees cover the following points. The exemption from duties of all utensils and materials intended to be used in the culture of various rubber trees named in the decree, and in harvesting and preparation of rubber extracted from these trees, the granting of liberal bonuses ranging from \$250 to \$800 to those who shall start new plantations and carry them to successful production; the establishment by the Government of Experiment and Demonstration Stations at convenient places in the different states lying within the rubber territory; the building of houses where immigrants brought into the rubber country may receive proper shelter and sanitary habitations, and the building of hospitals where they may be given, free of charge, any necessary medical treatment; the construction of narrow gauge and other railways in various sections of the rubber country, including a railway from some convenient place on the Madura-Mamore Railway to the frontier of Peru; the execution of work that shall make navigable for the shallow rubber-boats various rivers where it is impossible now for these boats

to operate, the promotion of many centres of food production for the maintenance of the rubber gatherers; the holding of triennial exhibitions at Rio de Janeiro, intended for the instruction and encouragement of rubber growers; and other measures tending to stimulate the production of rubber and materially assist in the opening up of the rubber country." It only remains for Brazil to carry out with determination the above for her to resume and to maintain her head. What an object lesson all the above is in far seeing legislation. One cannot but compare the future of that country helped and sustained by its Government, with the "laissez faire" policy of a Government, which leaves the planting community to struggle unaided, and one which goes out of its way by its countenance to denude the country of its labourers--the backbone of its development.

The other fact that stood out prominently was the exhibition of two sets of automobile tires made from genuine Synthetic rubber by German chemists. It is said that the producers of natural rubber need not be alarmed as their cost has been prohibitive. German chemists set apart, five years ago, one million marks or £.6,56,250 to produce Synthetic rubber, and have succeeded in producing tires made of Synthetic rubber which have "carried an auto of weight 4,000 miles, apparently little worn and unpunctured, and promising a few thousand miles more." What these two sets of tires cost no one knows--but as they are the only tangible results of five years' research they must be very costly. But we wish to emphasise the fact that Synthetic rubber has arrived, and to urge that fact as a warning to planters to set their house in order betimes and not suffer the fate of the Indigo planters, who were ruined by the discovery in the laboratory by Synthetic Indigo. Rubber planters should, from to-day if they have not already done so, study to minimise the coming of Synthetic rubber, for come it will, as sure as morning follows night, and this can only be done by economy of cultivation, the employment of the most up-to-date machinery in preparation, and scientific aid: the two former, in our opinion, will be futile unless with the help of the latter. These are honest truths but it is only by constant re-iteration of these platitudes that these honest truths are driven home. It must be remembered that the acutest minds in Europe and America are employed in evolving in the laboratory a Synthetic rubber of commercial value to challenge the supremacy of the natural product. It took twenty five years of research to drive natural indigo out of the market, but if the high intelligence now working at the production of natural rubber will take to itself the lessons of the past, it should make it impossible for laboratory made rubber to cope with the natural product. With the scientific aid now at the disposal of rubber planters we feel convinced that Synthetic rubber is but "such stuff as dreams are made on" Dr. Driesberg, Director General of the Farbenfabriken of Elberfeld, says, "Synthetic rubber will surely not appear on the market in the immediate future, but I, for one, hope to live long enough to see art triumph over nature also in this industry." Dr. Perkin, Professor of Chemistry at Victoria University of Manchester, supports this view and says, "I think many will agree with the Doctor from Elberfeld that cheap Synthetic rubber will be put on the market at a price which will enable it to compete with plantation rubber possessing the same properties." It remains for the planter, by the means already indicated to shatter this prophecy and make the competition impossible. It is impossible with the space at our disposal to notice all the matters of absorbing interest contained in these pages, interspersed as they are with illustrations of the various countries and machines exhibited, but Ceylon and the Federated Malay States are to be congratulated on having won gold and silver medals for their exhibits.